

The Detroit Children's Health Study: An Examination of the Effects of Ambient Air Exposure on the Respiratory Health of Asthmatic Children

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Exposures

- Mobile Source Emissions**
- Local car and truck traffic
 - Interstate traffic
 - International border crossings

Urban Air Toxics

- Manganese
- Volatile Organic Compounds
- Other Air Toxics from Industrial Sources



Ambient Air Monitoring

Summer of 2005, Passive Sampling
Six one-week periods at 25 schools
Nitrogen dioxide

- Ogawa passive samplers

Volatile Organic Compounds

- Carbopack X passive samplers
- Petroleum and process-related compounds

Particulate Matter

- Wagner-Leith Passive Aerosol Samplers
- SEM analysis of metals for source apportionment



Questions to be Addressed:

- How do **urban air pollution levels** differ from neighborhood-to- neighborhood?
- Are ambient pollutant exposures reflected in **clinical / biological markers of exposure**?
- Are exposure biomarkers predictive of differences in **biomarkers of early effect**?
- What role do neighborhood differences in urban air pollutants play in the **development of allergies and asthma**?



Detroit Children's Health Study

School-based Health Data Collection

- Questionnaires (Parental-Report)
 - 15,000 children
 - Asthma and wheeze-related symptoms
 - Home environment (molds / pests / ETS)
- Examinations (In-school subset)
 - Lung function 3,500 children
 - Exhaled nitric oxide 2,000 children



Study Participants

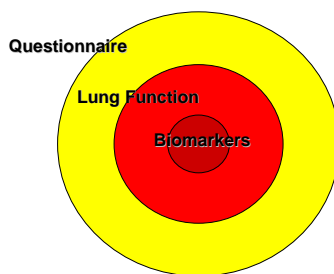
- Detroit and Dearborn Public Schools
- 60 selected elementary schools
- 4th and 5th grade students
- Parents and guardians



"People are Different"

By Christopher
Age 11
Iosco County,
Michigan

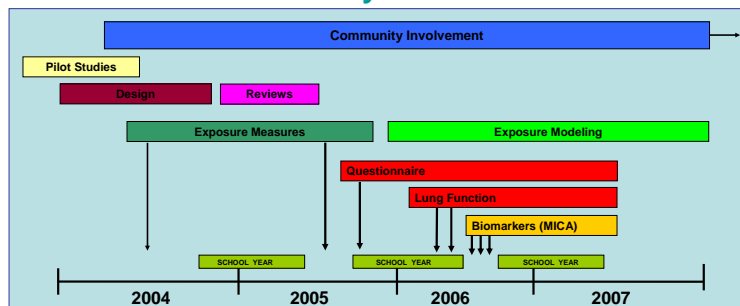
Nested Research Studies



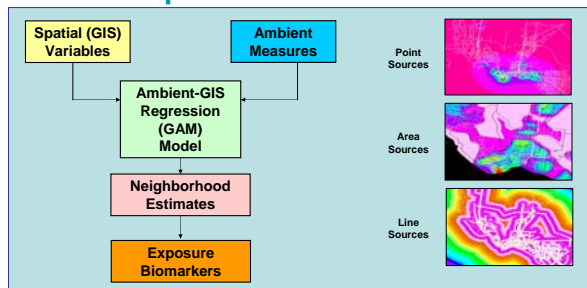
Schools and Sources



Study Schedule



Exposure Assessment



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for Environmental Solutions



2005
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